

Waste Heat Driven Chilling Technology for Can Cooker/Cooler Optimization

GOALS

- Demonstrate waste heat driven refrigeration technology in process cooling for cooker/coolers at a fruit and vegetable canning plant.
- Develop a simple technology application tool to allow inexpensive duplication of waste heat recovery for process cooling across fruit and vegetable canning plants in California.

PROJECT DESCRIPTION

Thermal processing of fruits and vegetables involves heating the cans in a retort and then cooling the cans. Steam for heating the cans is obtained from gas fired boilers. Chilled water for cooling cans is frequently obtained from electrically driven refrigeration systems. Cooling operation is the bottleneck in the canning process due to heat rejection limitations during summer months when electricity demand is at its peak.

Linking heating and cooling operations by using waste heat from the boiler to drive the refrigeration will optimize the can cooking/cooling cycle energy use, reducing electricity used for chilling and increasing plant capacity. Several variations of thermally driven refrigeration technology will be assessed. The project will select the optimal technology and demonstrate it at a Del Monte Inc. canning plant. It will also prepare a technology application tool and make it available to the industry at large.



A Retort at a Canning Plant



Chiller used for Cooling

SITE BENEFIT

The chilling cycle of the can cooker/cooler process at the selected site consumes about 1.32 million kWh of electricity per year. This demonstration project is expected to save about 75% of this electricity. Savings are partially offset by the 13,000 therms of gas that may be needed to supplement waste heat.

INDUSTRY BENEFIT

There are approximately 56 “processor” members of the California League of Food Processors. It is estimated that two-thirds of these companies have cooking and cooling operations, with the total number of cookers statewide exceed 200 sites. This technology is applicable at several of these sites.

FUNDING AMOUNT

Project Cost: \$350,701

Public Interest Energy Research Program Contribution \$299,701 (85%)

FOR MORE INFORMATION

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